

# **PCT**

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION See Form PCT/IPEA/416			
SH/PH/8416INT				
International application No.	International filing date (day/mont			
PCT/IB 2003/001974	25-04-2003	03-10-2002		
International Patent Classification (IPC) o	r national classification and IPC			
G06T3/00, H04M1/247				
		·		
Applicant	7\ T			
NOKIA CORPORATION ET	AL			
This report is the international pre Authority under Article 35 and tre	liminary examination report, establi ansmitted to the applicant according	shed by this International Preliminary Examining to Article 36.		
2. This REPORT consists of a total of	of 7 sheets, including	g this cover sheet.		
3. This report is also accompanied b	y ANNEXES, comprising:			
a. (sent to the applicant	and to the International Bureau) a	total of 12 sheets, as follows:		
sheets of the	description, claims and/or drawings	which have been amended and are the basis of this report		
and/or sheets	containing rectifications authorized ve Instructions).	by this Authority (see Rule 70.16 and Section 607 of the		
sheets which	supersede earlier sheets, but which	this Authority considers contain an amendment that goes		
beyond the di Supplemental	sclosure in the international applica	tion as filed, as indicated in item 4 of Box No. I and the		
b. (sent to the Internation	onal Rureau only) a total of (indicate	type and number of electronic carrier(s))		
	containing a seque	ance listing and/or tables related thereto, in computer		
	readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).			
4. This report contains indications re	elating to the following items:			
-	f the report			
Box No. II Priority				
Box No. III Non-es	tablishment of opinion with regard	o novelty, inventive step and industrial applicability		
Box No. IV Lack of	funity of invention			
Box No. V Reason		th regard to novelty, inventive step or industrial		
	documents cited			
Box No. VII Certain	defects in the international applicat	ion		
Box No. VIII Certain	observations on the international ap	pplication		
LN.				
Date of submission of the demand	Date of	completion of this report		
26-04-2004		27-01-2005		
Name and mailing address of the IPEA/S	E Authoriz	zed officer		
Patent- och registreringsverket Box 5055				
S-102 42 STOCKHOLM	Rola	Roland Landström /itw		
Facsimile No. +46 8 667 72 88		Telephone No. +46 8 782 25 00		

Form PCT/IPEA/409 (cover sheet) (January 2004)

In dional application No.
( 0000 (001074
PCT/IB 2003/001974

Box	k No. I	Bas	sis of the report	
1.	With r	regard to	the language, this report is based on the international application in the lan ated under this item.	guage in which it was filed, unless
			ort is based on a translation from the original language into the following language of a translation furnished for the purposes of:	nage,
			international search (under Rules 12.3 and 23.1(b))	
			publication of the international application (under Rule 12.4)	
		П	international preliminary examination (under Rules 55.2 and/or 55.3)	
2.	furnish	hed to the e not ann	the <b>elements</b> of the international application, this report is based on (reper receiving Office in response to an invitation under Article 14 are referred to nexed to this report):  rnational application as originally filed/furnished	placement sheets which have been o in this report as "originally filed"
	$\mathbb{H}$		cription:	
				as originally filed/furnished
		pages pages*	1 - 4a received by this Authority on 0	
	M	the clair		
		pages		as originally filed/furnished
		pages*	as amended (together wi	ith any statement) under Article 19
			11 - 17 received by this Authority on 0	8-12-2004
		pages*	received by this Authority on	
	$\boxtimes$	the drav	wings:	
		pages	1 - 4	as originally filed/furnished
		pages*	received by this Authority on	
		pages*	received by this Authority on	
		a seque	nce listing and/or any related table(s) - see Supplemental Box Relating to Sequ	nence Listing.
3.		The am	endments have resulted in the cancellation of:	
İ			the description, pages	·
			the claims, Nos.	
		$\Box$	the drawings, sheets/figs	
]		同	the sequence listing (specify):	
			any table(s) related to the sequence listing (specify):	
4.		This rep made, s 70.2(c))	port has been established as if (some of) the amendments annexed to this resince they have been considered to go beyond the disclosure as filed, as indical.	port and listed below had not been ated in the Supplemental Box (Rule
			the description, pages	
	•	$\overline{\boxtimes}$	the claims, Nos. 40 - 43	
		同	the drawings, sheets/figs	
		$\Box$	the sequence listing (specify):	
			any table(s) related to the sequence listing (specify):	
	<i>[[:</i> :		s, some or all of those sheets may be marked "superseded."	•
	ıj nem	4 appues	s, some or an of mose sneets may be marked supersease.	•



national	application No.
PCT/IB	2003/001974

Box No.				
The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:				
	the entire international application			
$\boxtimes$	claims Nos. 40 - 43			
because:				
	the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):			
	the description, claims or drawings (indicate particular elements below) or said claims Nosare so unclear that no meaningful opinion could be formed (specify):			
	the claims, or said claims Nos are so inadequately supported			
	by the description that no meaningful opinion could be formed.			
	no international search report has been established for said claims Nos. 40 - 43			
	the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:			
	the written form has not been furnished			
	does not comply with the standard the computer readable form has not been furnished			
	does not comply with the standard  the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in the Annex C-bis of the Administrative Instructions.			
	See Supplemental Box for further details.			

1	Internal application No.		
		_	
	PCT/IB	2003/001974	

Box	k No. V	Reasoned statement us citations and explanat	nder Article 3 ions supportin	5(2) with regard to novelty, inventive step or industrial a ng such statement	pplicability;
1.	Statement Novel		Claims Claims	1 - 39	YES NO
	Inven	tive step (IS)	Claims Claims	1 - 39	YES NO
	Indus	trial applicability (IA)	Claims Claims	1 - 39	YES NO

## 2. Citations and explanations (Rule 70.7)

The invention is intended to provide a mobile device with a display wherein the manner in which information is presented can be varied.

Reference is made to the following documents:

- D1: US 2002033836 A1
- D2: EP 1191768 A2
- D3: GB 2358515 A
- D4: WO 0186920 A2
- D5: EP 1052598 A2

Document D1 (page 1, column 1, line 1 - page 2, column 2, line 6, figures 1 - 4, abstract) discloses a handheld computer or communications device (10) having a display (12) and a soft key (20) associated with the display (12). The display (12) displays information content with a first orientation and the soft key (20) appears as an icon or other graphic depiction (control content) on the display (12). A processor (see claim 1), for controlling the display (12), is arranged to vary the first orientation of the information content to a second orientation and maintain the icon or other graphic depiction (control content) on the soft key (20) in response to an activated key (user input device). According to page 2, column 1, lines 15-28, claims 12-13 and figures 3-4, the second orientation uses less than the entire viewing area to display the second orientation, i.e. the size of the image can be changed.

Document D2 (column 2, line 9 - column 8, line 14, figures 1 - 4, abstract) discloses a telecommunication terminal (1) having a display (3) for displaying information content, an input key

.../...

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient. Continuation of: Box  $\,V\,$ 

and a control unit (4) for controlling the display (3), arranged to vary a first orientation of the information content to a second orientation in steps of  $90^{\circ}$  (column 2, lines 55-58).

Document D3 (page 3, line 1 - page 16, line 28, figures 1 - 4C, abstract) discloses a mobile telephone (101) having a compass (109) that controls a microprocessor (105) to rotate the image of a map on a screen (102). The map is obtained from the network.

Document D4 (page 5, line 15 - page 11, line 27, figures 1 - 6, abstract) discloses a portable hand-held device (cellular telephone 1) having a processor (602), a display control unit (603) and a display (204, 304, 304A, 404, 502, 604). A user input device (device movement measuring means) controls a zoom function to increase/decrease the size of the viewed text or increase/decrease the magnification of a picture image.

Document D5 (column 1, line 5 - column 32, line 58, figures 1 - 20, abstract) discloses a mobile telephone having an input unit (401) and a display (413) for displaying information content received from a server. The size of the image on the display can be changed.

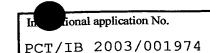
The device and the method of claims 1 and 13 differ from what is known from document D1, the closest prior art, in that the location of the input key does not vary when the orientation of the information content is varied. The device and the method of claims 1 and 13 are therefore novel (Article 33(2) PCT).

The problem to be solved by the present invention may therefore be regarded as how to improve the device and the method.

The solution to this problem proposed in claims 1 and 13 is considered to involve an inventive step (Article 33(3) PCT) since none of the cited documents suggest this feature.

Claims 2-12, 14-15 and 38 are dependent on claims 1 or 13 and as such also meet the requirements of the PCT with respect to novelty and inventive step. Claims 1-15 and 38 also meet the requirement of industrial applicability.

.../...



#### Supplemental Box

In case the space in any of the preceding boxes is not sufficient. Continuation of: Box  $\,V\,$ 

The invention claimed in independent claims 16, 24, 25 and 34 differs from what is known from document D1, the closest prior art, in that, among other things, the size of the display area is changed incrementally in response to successive inputs from the user input device.

The problem to be solved by the present invention may therefore be regarded as how to improve the device and the method.

The solution to this problem proposed in claims 16, 24, 25 and 34 is considered to involve an inventive step (Article 33(3) PCT) since none of the cited documents suggest this feature.

Claims 17 - 23, 26 - 33, 35 - 37 and 39 are dependent on claims 16, 24, 25 or 34 and as such also meet the requirements of the PCT with respect to novelty and inventive step. Claims 16 - 37 and 39 also meet the requirement of industrial applicability.



Into onal application No.
PCT/IB 2003/001974

# Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The expression "the control content" in claims 32, 33 and 37 is not defined in claims 32, 33, 37 or in any of the claims referred to.

TITLE

20

A mobile device for displaying information content.

#### FIELD OF THE INVENTION

5 Embodiments of the invention relate to a mobile device for displaying information content.

#### BACKGROUND TO THE INVENTION

10 Current mobile devices display information content in a manner determined at manufacture. Some mobile devices have two physically distinct configurations where the whole of the display is used in 'portrait' for one configuration and the whole of the display is used in 'landscape' in the other configuration. A dedicated hardware switch detects when the user converts the device between configurations by, for example, opening or folding the device.

It would be desirable to allow the manner in which information is presented by the mobile device to be varied as and when is suitable. In particular, it would be desirable to allow a user flexibility in controlling the variation.

#### BRIEF DESCRIPTION OF THE INVENTION

According to a first embodiment there is provided a mobile device for displaying information content, comprising: at least one input key associated with a display; a display for displaying information content with a first orientation and control content, adjacent an input key, indicating its function; and a processor, for controlling the display, arranged to vary the first orientation of the information content to a second orientation and maintain control content adjacent the input key, wherein the location of the input key does not vary when the orientation of the information content is varied.

According to the first embodiment there is provided a method of controlling the display of a mobile device comprising the steps of: displaying information content with a first orientation and control content adjacent an input key, indicating the key's function; and changing the first orientation to a second orientation while maintaining control content adjacent the input key, wherein the location of the input key does not vary when the orientation of the information content is changed.

The orientation of the information content independently of the control content allows information to be presented the correct way up without changing the orientation of the mobile device and without affecting the functionality of the device.

When the information content orientation is changed, the control content associated with a first input key may be swapped with the control content associated with a second input key. When the information content orientation is changed, the orientation of the control content may be changed.

According to a second embodiment there is provided a mobile device for displaying information content, comprising: a display, having a variable display area, for displaying within the variable display area information content; a user input device; and a processor, for controlling the display, arranged to incrementally change the size of the display area while displaying the information content, in response to successive inputs from the user input device.

25

30

20

According to the second embodiment there is provided a method of controlling the display of a mobile device comprising the steps of: displaying information content within a first display area; and incrementally changing the size of the first display area while displaying the information content, in response to successive inputs from a user.

The resizing of the display area for the information content may enable the creation of information content in the mobile device that can be viewed correctly on another device and may enable the correct presentation of information content in the mobile device that was created on another device. This is particularly useful when the information content is a picture made up of a collection of spaced alphanumeric characters and the similarity of the collection of alphanumeric characters to the picture depends upon the display area in which the alphanumeric characters are framed.

According to a third embodiment there is provided a mobile device for displaying information content, comprising: a display for displaying information content in a display area of a user-determined size and orientation; a user input device; and a processor, for controlling the display, operable to vary the user-determined orientation and/or to incrementally change the size of the display area while displaying the information content, in response to successive inputs from the user input device.

According to the third embodiment there is provided a method of controlling the display of a mobile device comprising the steps of: displaying information content within a first display area with a first orientation; incrementally changing the size of the first display area while displaying the information content, in response to successive inputs from a user; and changing the orientation of the information content to a second orientation.

- The ability to be able to both re-size what is displayed and to change its orientation, enables a user to share information content received from another device with a person standing next to them in the form created by the originator and without having to rotate the mobile device.
- 30 The software control of the orientation of the information content may be incorporated within the game-play of a game played by a user on the mobile

device. It may also enable the handedness of the mobile device to be changed, so that it can be switched from right-handed use to left-handed use.

The term information content includes map images, photographic images, 5 alphanumeric text messages and images from games.

#### BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention reference will now be made by way of example only to the accompanying drawings in which:

10

- Fig. 1 schematically illustrates a hand-held mobile device 10 for displaying information to a user.
- Fig. 2 illustrates one possible user interface for the mobile device 10
- Figs 3A, 3B and 3C illustrate the successive rotation of the information content without rotation of control content;
  - Figs 4A, 4B, 4C and 4D illustrate the successive rotation of the information content with rotation of control content;
  - Figs 5A, 5B, 5C and 5D illustrate the successive rotation of the information content with rotation and interchange of control content; and
- Figs 6A, 6B, 6C illustrate the successive reduction in size of a display area with each actuation of the user input device.

#### DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

- Fig. 1 schematically illustrates a hand-held mobile device 10 for displaying information to a user. The mobile device 10 may be a personal digital assistant, a mobile telephone or the like. The mobile device 10 illustrated in this example is a mobile telephone.
- The mobile device 10 comprises: a processor 12; a memory 14; a display 20; a first input key 30 and a second input key 31; a user input device 40; and a radio frequency transceiver 50.

4a

The processor 12 receives input from the first input key 30, the second input key 31, the user input device 40 and the radio frequency transceiver 50. The processor 12 provides outputs to the display 20 and the radio frequency transceiver 50. The processor 12 can also read from and write to the memory 14.

5

The operation of the mobile device 10 is controlled by software computer program instructions loaded into the processor 12 from the memory 14.

#### **CLAIMS**

- 1. A mobile device for displaying information content, comprising: at least one input key associated with a display;
- a display for displaying information content with a first orientation and control content, adjacent an input key, indicating its function; and a processor, for controlling the display, arranged to vary the first orientation of the information content to a second orientation and maintain control content adjacent the input key, wherein the location of the input key does not vary when the orientation of the information content is varied.
  - 2. A mobile device as claimed in claim 1, further comprising a user input device, wherein the processor is operable to vary the user-determined orientation of the information content and maintain control content adjacent the input key, in response to input from the user input device.
  - 3. A mobile device as claimed in claim 2, wherein the functionality of the user input device is controlled by the processor.
- 4. A mobile device as claimed in claim 1, 2 or 3, wherein the processor is arranged to vary the user determined orientation of the information content between four predetermined orientations.
- 5. A mobile device as claimed in any preceding claim, wherein the processor is arranged to vary the user determined orientation of the information content by successive increments of 90 degrees rotation about a first origin in the display.
- A mobile device as claimed in any preceding claim, wherein the processor, is operable to vary the user-determined orientation of the information content while
   it is displayed.

- 7. A mobile device as claimed in any preceding claim wherein the control content for the input key varies as the function of the input key is varied by the processor.
- 5 8. A mobile device as claimed in any preceding claim wherein the processor, when varying the orientation of the information content maintains the same control content adjacent the input key.
- A mobile device as claimed in any preceding claim wherein the control
   content has a fixed orientation with respect to the mobile device.
  - 10. A mobile device as claimed in any one of claims 1 to 8, wherein the processor is operable to rotate the information content about a first origin and simultaneously rotate the control content about a second different origin, by ninety degrees.
  - 11. A mobile device as claimed in claim 10, wherein the processor is operable to simultaneously rotate the information content and the control content, in response to input from the user input device.
  - 12. A mobile device as claimed in claim 10 or 11, wherein the first origin and the second origin are fixed.
- 13. A method of controlling the display of a mobile device comprising the steps of: displaying information content with a first orientation and control content adjacent an input key, indicating the key's function; and changing the first orientation to a second orientation while maintaining the control content adjacent the input key, wherein the location of the input key does not vary

30 when the orientation of the information content is changed.

15

- 14. A method as claimed in claim 13, wherein the step of changing the first orientation is performed in response to user input while displaying the information content.
- 5 15. A method as claimed in claim 13 or 14, further comprising the step of changing the control content and/or its orientation when changing the orientation of the information content.
- 16. A mobile device for displaying information content, comprising: a display,10 having a variable display area, for displaying within the variable display area information content;

a user input device; and

- a processor, for controlling the display, arranged to incrementally change the size of the display area while displaying the information content, in response to successive inputs from the user input device.
- 17. A mobile device as claimed in claim 16, wherein the processor in response to input from the user input changes the display area size from a first one of a predetermined plurality of display area sizes to a second one of the predetermined plurality of display area sizes.
- 18. A mobile device as claimed in claim 16 or 17, wherein the processor in response to input from the user input varies the display area while displaying the information content.

25

15

20

19. A mobile device as claimed in any one of claims 16 to 18, comprising a radio frequency transceiver, wherein the information content originates in another device and is received by the radio frequency transceiver from the another device.

30

20. A mobile device as claimed in any one of claims 16 to 18, wherein the information content originates in the device.

- 21. A mobile device as claimed in any one of claims 16 to 20, wherein the information content is alphanumeric text data.
- 5 22. A mobile device as claimed in claim 21, wherein the processor, provides a text message handling application in which the display area for the text message is variable in response to input from the user input device.
- 23. A mobile device as claimed in any one of claims 16 to 22, wherein the user input device is a rotatable dial.
  - 24. A method of controlling the display of a mobile device comprising the steps of:
  - displaying information content within a first display area; and
- incrementally changing the size of the first display area while displaying the information content, in response to successive inputs from a user.
  - 25. A mobile device for displaying information content, comprising:
- a display for displaying information content in a display area of a user-determined size and orientation;
  - a user input device; and
  - a processor, for controlling the display, operable to vary the user-determined orientation and to incrementally change the size of the display area while displaying the information content, in response to successive inputs from the user
- 25 input device.
- 26. A mobile device as claimed in claim 25, further comprising at least one input key associated with a display; wherein the display is operable to display control content, adjacent the input key, indicating its function and wherein the control content remains adjacent the input key when the display area is resized.



27. A mobile device as claimed in claim 25 or 26, wherein the display information has a predetermined and fixed orientation with respect to the display area so that a variation in the display area produces a concomitant variation in the orientation of the information content.

. 5

28. A mobile device as claimed in any one of claims 25, 26 or 27, wherein the processor in response to first input from the user input device changes the display area size from a first one of a predetermined plurality of display area sizes to a second one of the predetermined plurality of display area sizes.

10

29. A mobile device as claimed in any one of claims 25 to 28, wherein the processor in response to second input from the user input devices changes the orientation of the display area from a first one of a predetermined plurality of orientations to a second one of the predetermined plurality of orientations.

15

30. A mobile device as claimed in claim 29, wherein the processor is arranged to vary the user determined orientation of the display area by successive increments of 90 degrees rotation about a first origin in the display.

20

31. A mobile device as claimed in any one of claims 25 to 31, wherein the processor, arranged to vary the user-determined size and orientation of the display area while the information content is displayed therein.

25

32. A mobile device as claimed in any one of claims 25 to 33, wherein the display has a plurality of edges and the control content is fixedly positioned at one edge of the display.

30

33. A mobile device as claimed in any one of claims 25 to 32, wherein the processor, is arranged to rotate the display area about a first axis and simultaneously rotate the control content about a second axis, by ninety degrees in response to second input from the user input device.

34. A method of controlling the display of a mobile device comprising the steps of:

displaying information content within a first display area with a first orientation; incrementally changing the size of the first display area while displaying the information content, in response to successive inputs from a user; and changing the orientation of the information content to a second orientation.

5

10

- 35. A method as claimed in claim 34, further comprising the step of displaying control content adjacent an input key, indicating the key's function wherein the control content is maintained adjacent the input key.
- 36. A method as claimed in claim 34 or 35, wherein the steps of changing the first orientation and changing the size of the first area are performed while displaying the information content.
- 37. A method as claimed in claim 34, 35 or 36, further comprising the step of changing the orientation of the control content when changing the orientation of the information content.
- 20 38. A mobile device as claimed in claim 10, 11 or 12, wherein the control content is positioned at the second origin.
- 39. A mobile device as claimed in any one of claims 16 to 23, wherein the processor is arranged to incrementally change the display area without varying25 the orientation of the information content.
  - 40. A mobile device for displaying information content, comprising: a display for displaying information content, including alphanumeric characters, over a plurality of lines;
- 30 a user input device; and a processor, for controlling the display, arranged to change the number of alphanumeric characters in a line of the displayed information content, while

displaying the whole of the information content, in response to input from the user input device.

41. A method of controlling a display of a mobile device comprising the steps of:
displaying information content, including alphanumeric characters, over a plurality of lines; and changing, in response to input from a user, the number of alphanumeric characters in a line of the displayed information content, while displaying the whole of the information content.

- 42. A mobile device for displaying information content, comprising: a display for displaying information content, including alphanumeric characters, over a plurality of lines of a user-determined size and orientation; a user input device; and
- a processor, for controlling the display, operable to vary the user-determined orientation of each line and to change the number of alphanumeric characters that are displayed in each line, in response to input from the user input device.
- 43. A method of controlling the display of a mobile device comprising the steps of: displaying the information content, including alphanumeric characters, over a plurality of lines; changing the number of alphanumeric characters that are displayed in each of the lines, in response to input from a user; and

# This Page is Inserted by IFW Indexing and Scanning Operations and is not part of the Official Record

## BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

□ BLACK BORDERS
□ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
□ FADED TEXT OR DRAWING
□ BLURRED OR ILLEGIBLE TEXT OR DRAWING
□ SKEWED/SLANTED IMAGES
□ COLOR OR BLACK AND WHITE PHOTOGRAPHS
□ GRAY SCALE DOCUMENTS
□ LINES OR MARKS ON ORIGINAL DOCUMENT
□ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY

## IMAGES ARE BEST AVAILABLE COPY.

OTHER:

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.